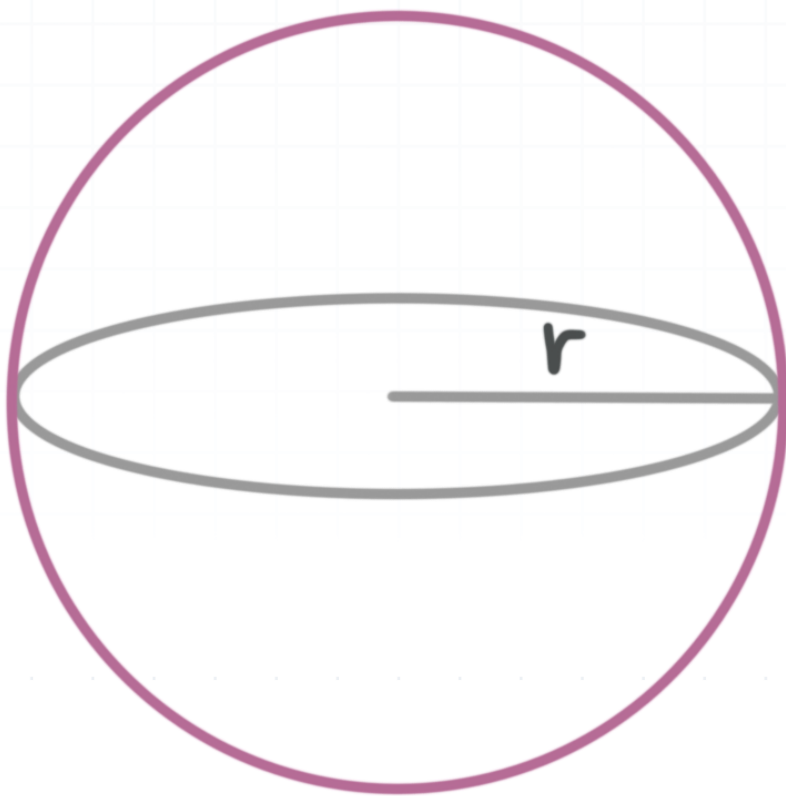


Volume/Surface area of spheres

In this lesson we'll look at the volume and surface area of spheres.

Spheres

A sphere is a perfectly round ball.



Volume of a sphere

The volume of a sphere is given by

$$V = \frac{4}{3}\pi r^3$$



The symbol π is used for exact answers and $\pi \approx 3.14$ is used for approximate answers.

Surface area of a sphere

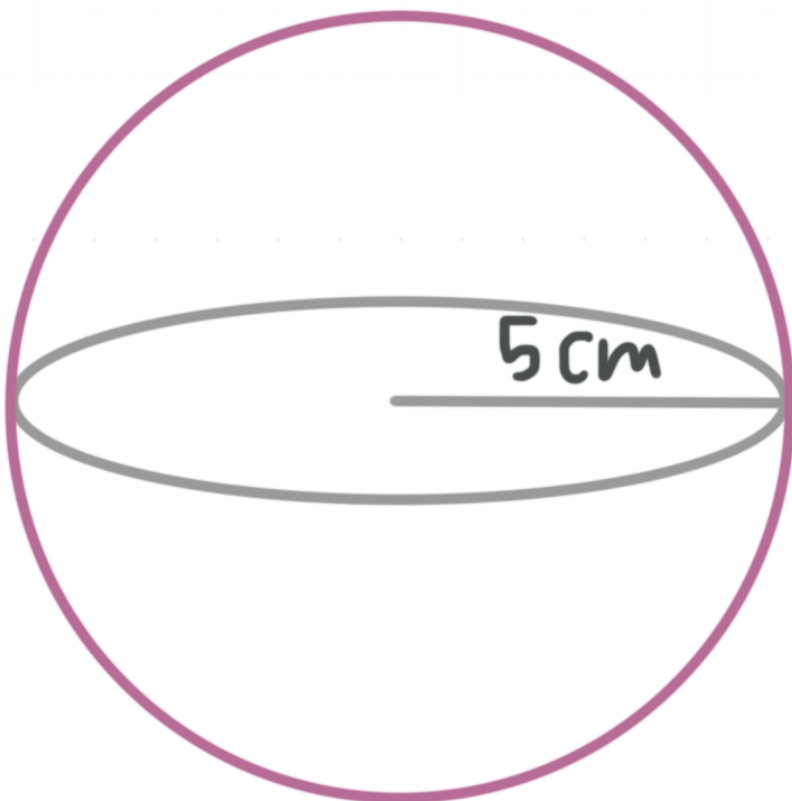
The surface area of a sphere is given by

$$S = 4\pi r^2$$

Let's do a few examples.

Example

What is the surface area of the sphere?



Use the formula for surface area, then plug in the value for the radius.



$$S = 4\pi r^2$$

$$S = 4\pi(5)^2$$

$$S = 100\pi \text{ cm}^2$$

Let's try one with volume.

Example

What is the volume of a sphere with a diameter of 50 cm?

The formula for volume is

$$V = \frac{4}{3}\pi r^3$$

We're given the diameter, so we need to divide by 2 to get the radius.

$$r = \frac{d}{2}$$

$$r = \frac{50 \text{ cm}}{2}$$

$$r = 25 \text{ cm}$$

Plugging into the formula for volume, we get

$$V = \frac{4}{3}(3.14)(25)^3$$



$$V = \frac{4}{3}(3.14)25^3$$

$$V = \frac{4}{3} \cdot 3.14 \cdot 15,625$$

$$V \approx 65,416.67 \text{ cm}$$

